



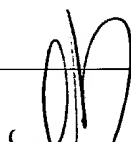
UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/875,685	06/06/2001	Stuart James Rowen	6086	7535
6858	7590	11/16/2004		
BREINER & BREINER 115 NORTH HENRY STREET P. O. BOX 19290 ALEXANDRIA, VA 22314			EXAMINER RUTHKOSKY, MARK	
			ART UNIT 1745	PAPER NUMBER

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/875,685	Applicant(s) ROWEN ET AL.	
	Examiner Mark Ruthkosky	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-5 and 10-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 2-5 and 10-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>8/25/2004</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The applicant's response, filed 8/25/2004, has canceled claims 1 and 6-9. Claim 23 has been added.

Information Disclosure Statement

The information disclosure statement filed 2/26/2002 has been placed in the application file, and the information referred to therein has been considered as to the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 23 recites the limitation "said plate material." There is insufficient antecedent basis for this limitation in the claim. Plate material is not claimed before this limitation.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 1745

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 10, 11, 14, 15 and 19-23 are rejected under 35 U.S.C. 102(b) as being anticipated by De Haas et al. (US 5,833,516.)

The instant claims are to a method of manufacturing flow field plates for use in fuel cells, electrolyzers and batteries which contain a fluid electrolyte comprising sandblasting, bead blasting or grit blasting, in which a particulate resistant patterned mask is used, so that a fluid flow pattern determined by a pattern design on the mask is formed on a plate material.

The limitation "for use in fuel cells, electrolyzers and batteries which contain a fluid electrolyte" has been considered, however, the for use language is to an intended use of the fluid flow plates and is not given patentable weight.

De Haas et al. (US 5,833,516) teaches a method of manufacturing a transport plate comprising a particulate etchant-resistant mask including a pattern design adjacent a plate; a particulate etching the plate using a particulate etchant and a particulate etchant accelerator so that a fluid flow pattern determined by the pattern design is formed on the plate (col. 3, lines 20-65 and claims 1-17.) The blasting materials include various powder particles that are inherently considered to be sand, bead and grit. The accelerator may be particles of various grain sizes, which encompass sand, bead and grit sizes, (col. 2, lines 10-25; col. 5, lines 5-25.) Masking materials may be a photoresist mask, a metal or a synthetic material (col. 3, lines 20-50.) Adhesives for the masking material are noted. Figures 8-9 show two-axis etching of the plate and a raster pattern. Thus, the claims are anticipated.

Claim 22 is a product by process claim. The reference teaches a flow-field plate (a transport plate) and there for the claim is anticipated. MPEP 2113 states, "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-5, 13, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over De Haas et al. (US 5,833,516) as applied above, in view of Balko et al. (US 4,339,322,) or, alternatively, over Balko et al. (US 4,339,322,) in view of De Haas et al. (US 5,833,516) as applied above.

De Haas et al. (US 5,833,516) teaches a method of manufacturing a transport plate as previously described. The reference does not teach the plate comprises a carbon fiber composite material with a polymeric filler. Balko et al. (US 4,339,322,) however, teaches a graphite/polymer current collector/separator for a fuel cell, which is inherently a flow field plate as it has channels for transporting reactants of a fuel cell. The reference teaches forming flow

Art Unit: 1745

field grooves by pressure molding the material. The plates are assembled to form fluid entry and exit areas, which are aligned with stacked plates (figure 1.) It would be obvious to one of ordinary skill in the art at the time the invention was made to use the methods taught in De Haas et al. (US 5,833,516) to form the flow field grooves of Balko et al. (US 4,339,322) as one of ordinary skill in the art would recognize that the methods of forming a flow plate as taught by DeHaas will provide the same function and result when used to form channels on the graphite/fiber plate as taught by Balko. The motivation to combine the prior art references arises from the expectation that the prior art method will perform its expected function to achieve an equivalent result in forming grooves in the separator element of Balko. The artisan would have found the claimed invention to be obvious in light of the teachings of the references.

Claim 12 is rejected under 35 U.S.C. 102(b) as being obvious over De Haas et al. (US 5,833,516) in view of Tolles (5,738,574.)

De Haas et al. (US 5,833,516) teaches a method of manufacturing a transport plate comprising the steps of positioning a particulate etchant-resistant mask comprising a pattern design adjacent a plate; and particulate etching the plate using a particulate etchant and a particulate etchant accelerator so that a fluid flow pattern determined by the pattern design is formed on the plate as previously noted (col. 3, lines 20-65 and claims 1-17.) The accelerator may be adjusted with regard to the type of abrasive, grain size, etc. (col. 2, lines 15-30.) The reference does not teach silica grit blasting of the material, however, it would be obvious to one of ordinary skill in the art at the time the invention was made to use silica grit as the type of abrasive in order to etch the material. Silica grit is well known in the art to remove a material by pressure as taught by Tolles (5,738,574.) One of ordinary skill in the art would recognize from

Art Unit: 1745

the teaching of De Haas et al. that silica grit may be used as a material to blast or etch a substrate as described in Tolles (5,738,574.) Silica grit may be used as an equivalent material in the process taught by De Haas et al. as the silica grit will form transport channels in the same manner as taught by De Haas.

Claim 16 is rejected under 35 U.S.C. 102(b) as being obvious over De Haas et al. (US 5,833,516) in view of Kondrats (5,750,190.)

De Haas et al. (US 5,833,516) teaches a method of manufacturing a transport plate comprising the steps of positioning a particulate etchant-resistant mask comprising a pattern design adjacent a plate; and particulate etching the plate using a particulate etchant and a particulate etchant accelerator so that a fluid flow pattern determined by the pattern design is formed on the plate as previously noted (col. 3, lines 20-65 and claims 1-17.) The accelerator may be adjusted with regard to the type of abrasive, grain size, etc. (col. 2, lines 15-30.) The reference does not teach a vinyl polymer as the mask material, however, it would be obvious to one of ordinary skill in the art at the time the invention was made to use a vinyl polymer as the mask in order to protect the material. Vinyl polymers are well known in the art to protect or mask a material as taught by Kondrats (5,750,190.) One of ordinary skill in the art would recognize from the teaching of Kondrats (5,750,190) that a vinyl polymer may be used to protect a substrate from etching and blasting as described. From these teachings one of ordinary skill in the art would recognize that a vinyl polymer may be used as a mask material in the process taught by De Haas et al. as the mask will prevent the blasting of sections of the flow field substrate in order to form channels for fluid transport.

The rejection of claim 9 under 35 U.S.C. 102(b) as being obvious over De Haas et al. (US 5,833,516) in view of Van Kuiken (US 5,380,564) has been overcome by the applicant's cancellation of claim 9.

Response to Arguments

Applicant's arguments filed 8/25/2004 have been fully considered but they are not persuasive.

The applicant argues that the transport plates of DeHaas would not be suitable for use in fuel cells, batteries and electrolyzers. The applicant offers no support for this argument. The limitation "for use in fuel cells, electrolyzers and batteries which contain a fluid electrolyte" has been considered, however, the for use language is to an intended use of the fluid flow plates and is not given patentable weight. In response to applicant's argument, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). The process used in the prior art will form a flow-field plate.

The applicant further argues that DeHaas teaches the use of water jet blasting which is not encompassed by the amended claims. DeHaas teaches a powder spraying process using abrasive grain sized powders and particles (see col. 2, lines 15-30, and col. 5, lines 15-20.) The applicant further argues that DeHaas does not teach flow field plates. Transport plates with

Art Unit: 1745

apertures, and cavities are noted in col. 3, line 20. In response to applicant's arguments, the recitation for manufacturing flow field plates has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

The applicant further argues that different mechanisms of material removal result in different surface morphologies. In response to applicant's argument, it is noted that the features upon which applicant relies (i.e., the surface morphology) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The applicant further argues that the combination of references is based on non-analogous art and that one of ordinary skill in the art would not find the instant invention obvious over the prior art. In response to applicant's argument that the secondary reference include nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the references are both in the field of applicant's endeavor, i.e. the blasting of plates to form

Art Unit: 1745

channels and reasonably pertinent to the particular problem with which the applicant was concerned.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's

Art Unit: 1745

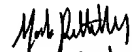
supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

Mark Ruthkosky

Primary Patent Examiner

Art Unit 1745


11/10/04